

WHAT IS CLAIMED IS:

1. A switching device for establishing communication paths between at least a first and second input/output port, said device comprising:

5           a first printed circuit board having a first plurality of input/output ports connected thereto;

              a first switching fabric respectively connected by a first plurality of communication channels to each of the first plurality of input/output ports;

10          a second printed circuit board having a second plurality of input/output ports connected thereto;

              a second switching fabric respectively connected by a second plurality of communication channels to each of the second plurality of input/output ports; and

15          an electrical connector removeably connectable to the first and second printed circuit boards and operable to provide electrical communications therebetween, the first and second plurality of output ports being mutually oriented in a common direction.

20          2. The switching device according to claim 1, wherein the first and second switching fabrics are operable to transfer electrical signals therebetween when the electrical connector is connected to the first and second printed circuit boards.

25          3. The switching device according to claim 1, wherein the electrical connector comprises a male-female electrical connector.

              4. The switching device according to claim 1, wherein the first and second switching fabrics are respectively operable to establish electrical communication paths between any of the first plurality of input/output ports and the second plurality of input/output ports.

5. The switching device according to claim 1, wherein the first and second switching fabrics are collaboratively operable to establish electrical communication paths between any of the first plurality of input/output ports and any of the second plurality of input/output ports when the electrical connector is connected to the first and second printed circuit boards.

10 6. The switching device according to claim 1, wherein each channel of the first and second plurality of communication channels respectively comprise at least one signal trace.

15 7. The switching device according to claim 5, wherein the first printed circuit board is connected to a first side of the electrical connector and the second printed circuit board is connected to a second side of the electrical connector, the first and second sides of the electrical connector being significantly parallel.

20 8. The switching device according to claim 7, wherein the first printed circuit board has a majority of active electronic components mounted on a first surface thereof, the second printed circuit board has a majority of active electronic components mounted on a first surface thereof, the first surface of the first printed circuit board and the first surface of the second printed circuit board oriented in opposing directions.

9. A method for establishing communication paths between a first input/output port of a first printed circuit board and a second input/output port, said method comprising the steps of:

5 receiving, on a communication cable, an electrical signal at the first input/output port;

transmitting, on a first communication channel connected to the first input/output port, the electrical signal to a first switching fabric on the first printed circuit board;

10 establishing a communication path between the first communication channel and a second communication channel by the first switching fabric;

transmitting, on the second communication channel, the electrical signal to the second input/output port.

15 10. The method according to claim 9, wherein the second input/output port is connected to the first printed circuit board.

11. The method according to claim 9, wherein the first and second communication channels respectively comprise at least one signal trace.

20 12. The method according to claim 9, wherein the second input/output port is connected to a second printed circuit board, said step of establishing further comprising the steps of:

25 providing a connection to an electrical connector by said first switching fabric, the electrical connector connected to the first printed circuit board and the second printed circuit board;

transmitting, by said first switching fabric, the electrical signal to the second switching fabric through the electrical connector; and

establishing, by the second switching fabric, a communication path between the second input/output port and the second switching fabric.

30 13. The method according to claim 12, wherein the electrical connector comprises a male-female electrical connector.

14. The method according to claim 12, wherein the first printed circuit board and the second printed circuit board are respectively connected to opposing surfaces of the electrical connector, the first and second printed circuit boards being oriented substantially in parallel.

15. A switching device for establishing communication paths between at least a first and second input/output port, said device comprising:

a first printed circuit board having a first plurality of input/output ports connected thereto;

5 a switching fabric respectively connected by a first plurality of communication channels to each of the first plurality of input/output ports, the switching fabric located on the first printed circuit board;

a second printed circuit board having a second plurality of input/output ports connected thereto; and

10 an electrical connector removeably connectable to the first and second printed circuit boards and operable to provide electrical communications therebetween, the second plurality of input/output ports connectable to the electrical connector by a second plurality of communication channels.

15 16. The switching device according to claim 15, wherein the first and second plurality of output ports are mutually oriented in a common direction.

20 17. The switching device according to claim 15, wherein the switching fabric is operable to transfer electrical signals between any one of the first plurality of input/output ports and the second plurality of communication ports when the electrical connector is connected to the first and second printed circuit boards.

18. The switching device according to claim 15, wherein the electrical connector comprises a male-female electrical connector.

25 19. The switching device according to claim 15, wherein each channel of the first and second plurality of communication channels respectively comprise at least one signal trace.

20. The switching device according to claim 15, wherein the first printed circuit board is connected to a first side of the electrical connector and the second printed circuit board is connected to a second side of the electrical connector, the first and second sides of the electrical connector being significantly parallel.

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21. The switching device according to claim 15, wherein the first printed circuit board has a majority of active electronic components mounted on a first surface thereof, the second printed circuit board has a majority of active electronic components mounted on a first surface thereof, the first surface of the first printed circuit board and the first surface of the second printed circuit board oriented in opposing directions.

After the first year, the author had to leave the University of Michigan because of financial difficulties.